REMARKS

Claims 1-24 are pending in the application.

By the foregoing Amendment, claims 1, 5, and 15 are amended.

Claims 1 and 15 are amended to more precisely define the invention relative to the prior art. Support for the amendments to claims 1 and 15 is found on paragraph [0025] of the description in the published application.

These changes are believed not to introduce new matter, and entry of the Amendment is respectfully requested.

Based on the above Amendment and the following Remarks, Applicant respectfully requests that the Examiner reconsider all outstanding rejections, and withdraw them.

Rejection under 35 U.S.C. § 112, ¶ 2

In paragraph 2 of the Office Action, claim 5 was rejected under section 112, second paragraph, for indefiniteness. This rejection is believed to be overcome by the foregoing amendment to claim 5 to change "a second electrode" to --the second electrode--.

Rejections under 35 U.S.C. § 102

In paragraph 4 of the Office Action, claims 1, 4, 8-13, 15-19, and 21-24 were rejected under section 1029b) as being anticipated by Ewart et al. ("Ewart"). This rejection is believed to be overcome by the foregoing amendments to claims 1 and 15.

Amended claims 1 and 15 require that a biological sample be disposed on a surface of the ferroelectric transducer. There is nothing in Ewart that teaches or suggests placing a sample on a surface of a ferroelectric transducer.

Ewart teaches a biosensor for use in determining analyte presence or concentration in a sample. In particular, Ewart is concerned with providing a cost effective and simple biosensor to detect assay reactions which take place at the molecular level. As a result, Ewart teaches the use of sub-micron particles or nanoparticles as reporter particles for assaying analyte in a test sample. The reporter particles act as labelling entities and analyte is analyzed by detecting a change in the label signal.

As the Examiner has pointed out, Ewart teaches a device comprising three layers: a metallization layer overlaid with a ferroelectric material, which is overlaid with a silica layer. The ferroelectric layer provides support for the test surface on which the reporter particles are formed thereon for assaying the analyte. *Ewart actually teaches away from the present invention* of placing a sample on a surface of a ferroelectric transducer. The ferroelectric transducer of the present invention is not used as a supporting layer but as an active layer for direct sensing of an analyte in a test sample. Unlike Ewart, the present invention does not require the use of labels or reporter particles.

As recited in claim 4 and claim 15, the biosensor of the present invention includes two electrodes for establishing a potential difference across the sample and ferroelectric transducer. The particular arrangement of the electrodes and sample on the ferroelectric transducer (recited in claims 4 and 20) allows reorientation of the permanent electric dipole moment possessed by the ferroelectric material of transducer by the application of an electric field. The effect of this field on the transducer, in turn affects the current/voltage across transducer. A response signal across electrodes is detected using the signal detector. The response signal is indicative of the effect of the electric field in the sample on the transducer.

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From the foregoing, it will be appreciated that the ferroelectric layer of Ewart's three-layer device cannot be equated with the present invention, as the ferroelectric layers of the Ewart and the invention function differently and distinctively from each other and thus interact with the transducer differently. Thus, on reading Ewart, the skilled person would not arrive at the present claimed invention.

It is therefore respectfully submitted that the invention as recited in claims 1 and 15 and the claims depending therefrom is neither anticipated nor rendered obvious by Ewart; and that the rejection should be withdrawn.

Rejections under 35 U.S.C. § 103

1. *Claims 2 and 3*

In paragraph 6 of the Office Action, claims 2 and 3 were rejected under section 103(a) as being unpatentable over Ewart. This rejection is believed to be overcome by the foregoing amendment to claim 1, from which claims 2 and 3 depend, for the reasons stated above with respect to the rejection of claim 1 under section 102(b) based on Ewart.

2. *Claims 1, 4-7, and 20*

In paragraph 7 of the Office Action, claims 1, 4-7, and 20 were rejected under section 103(a) as being unpatentable over Stasiak in view of Alexander and Ewart.

In the Office Action, it was conceded that Stasiak does not teach a ferroelectric transducer; and Alexander was cited as supplying this teaching. Alexander teaches dielectric materials. There is nothing in Alexander to disclose or suggest the method or sensor as claimed

in claims 1 and 15 of the present invention, or claims 4-7 depending from claim 1 and claim 20 depending from claim 15.

The Office Action does not explicitly state which of Stasiak's elements are equated to the transducer and electrodes recited in the claims. The Office Action only cites to column 6, line 52 to column 7, line 18, which is in the Summary of the Invention and does not include reference numbers, to column 12, lines 40-43, which also does not include reference numbers, and to Figure 7. From the citations and the statement in the Office Action that "Stasiak teaches a capacitive sensor comprising two electrodes, one with a functional layer thereon and the other in contact with a sample such that the sample is between the two electrodes," it is understood that the conductive layer 14 on the substrate 12 is considered to be the electrode.

In Stasiak's device, interaction (defined by Stasiak as "any chemical or electrical change that occurs between an analyte and a free-standing nanowire that can be detected") takes place between an analyte and one or more free-standing nanowires. Column 3, line 63 – column 4, line 2. Individual nanowires are configured for electrical communication with each other through a first end attached to a substrate, either through the substrate itself or a coating on the substrate. Column 4, lines 47-53.

Stasiak states at column 4, lines 3-12:

> Measurements can be taken in accordance with the present invention by measuring the conductance or conductance change in the array of nanowires, and/or by a capacitance measurement. When referring to "capacitance" in the context of the present invention, two basic embodiments are included. In one embodiment, an array of nanowires can act as a capacitive plate in a capacitor system. In another embodiment, an individual nanowire can act as a capacitive plate, wherein a dielectric coating on the nanowire provides space between the nanowire and an analyte.

From the foregoing, it will be appreciated that in Stasiak *the nanowires function as the capacitor plates, and the conductive layer 14 merely acts to provide electrical communication between the nanowires*, but does not function as an electrode for the purpose of establishing an electric field to polarize the analyte in the sample, as required by claims 1 and 15. Thus, even if Stasiak's nanowires were provided with a ferroelectric coating, the invention as recited in claims 1 and 15 would not result.

Further, Stasiak does not teach or suggest the specific configuration of the transducer, sample, and electrodes as recited in claims 4, 5, or 20.

It is therefore respectfully submitted that the invention as recited in claims 1, 4-7, and 20 is neither anticipated nor rendered obvious by Stasiak in combination with Alexander and Ewart; and that the rejection should be withdrawn.

3. *Claim 14*

In paragraph 8 of the Office Action, claim 14 was rejected under section 103(a) as being unpatentable over Ewart in view of Pankratz. This rejection is believed to be overcome by the foregoing amendment to claim 1, from which claim 14 indirectly depends.

In the Office Action, it was conceded that Ewart does not describe "removing a remaining portion of said sample," as recited in claim 14; and Pankratz was cited as supplying this teaching. Pankratz teaches an immunoassay for determining the enzymatic activity of creatine kinase-MB isoenzyme in liquid samples. There is nothing in Pankratz to remedy the deficiency of Ewart with respect to the method as recited in claim 1. Therefore, Ewart in combination with Pankratz cannot teach or suggest the method as recited in claim 1, much less the method as recited in claim 14.

It is therefore respectfully submitted that the invention as recited in claim 14 is neither anticipated nor rendered obvious by Ewart in combination with Pankratz; and that the rejection should be withdrawn.

Conclusion

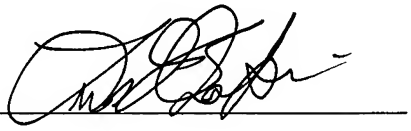
All rejections have been complied with, properly traversed, or rendered moot. Thus, it now appears that the application is in condition for allowance. Should any questions arise, the Examiner is invited to call the undersigned representative so that this case may receive an early Notice of Allowance.

Favorable consideration and allowance are earnestly solicited.

Respectfully submitted,

JACOBSON HOLMAN PLLC

Date: February 13, 2009

By: 

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